CONTESTABILITY: THE DEBATE AND INDUSTRY POLICY[1]

Rhys D. Evenden
University of Queensland
(initial point of contact)
44 Waterton St
Annerley Qld 4103

and

Alan W. Williams
Queensland Transport
16 Matlock St
Dorrington Qld 4060

The paper examines the legacy of the debate over perfectly contestable markets, the usefulness of several variations on the theory of imperfectly contestable markets including consideration of the problems associated with identifying contestable markets, and the contribution of contestability theory to the understanding of industry structure and appropriate industry policy. The debate surrounding contestability theory prompted economists to critically reassess the neoclassical theory of the firm, particularly with respect to: impediments to potential competition; the complementary role of potential and actual competition in affecting the conduct of incumbent firms; and the role and direction of appropriate industry regulation. The major problems identified by the debate are the difficulty in determining the extent to which markets may be imperfectly contestable and the framing of policy approaches appropriate to specific industry contexts.

1. INTRODUCTION

Baumol (1982) with Panzer and Willig (1982), BPW hereafter, presented contestability theory as a general model of industrial organisation that did not presuppose the optimality of any particular industry structure. The theory endeavored to overcome the problems arising from the stringent assumptions required under

[1] The authors wish to thank Emeritus Professor Ted Kolsen of the University of Queensland who read an early draft of this paper, but as always the responsibility for the views expressed herein rest with the authors.

perfect competition to achieve an efficient allocation of society's resources and the ensuing problem of second best solutions to achieve technical and allocative efficiency.

Contestability theory re-emphasised the premise that the existence of potential entrants may act as a disciplining force over the conduct of incumbents firms, regardless of industry structure, if particular conditions hold. As presented by BPW, a perfectly contestable market is one in which: (i) entrants have access to the same production techniques and factor markets as incumbents (no cost barriers to entry); (ii) entrants can serve the same market demands as incumbents (no demand barriers to entry); and (iii) there are no entry or exit costs. These conditions give entrants the "shooting gallery" choice, namely when to exit the market before the incumbents are able to respond to market entry. Potential entrants are also able to decide whether entry will be profitable *before commitment* based on the current market price because incumbents are held to be incapable of retaliation before exit can take place.

Contestability theory no longer holds widespread support amongst academic economists in the field of microeconomic policy because the assumptions have come to be regarded as implausible as a matter of logic or empirical evidence. Why these conditions were challenged is well documented in the literature (see Spence 1983, Shepherd 1984, Scherer 1989, Agliardi 1990 and Kessides 1991), but what is lacking is an assessment of the benefit of the debate over contestability. This paper reviews the contribution of the debate in relation to contestability theory and imperfectly contestable markets in Sections 2 and 3 respectively, Section 4 presents a synthesis of the conditions under which the hit-and-run entry concept will be directly applicable in developing specific industry policy, Section 5 considers useful developments in contestability theory, Section 6 outlines a range of empirical issues in relation to testing for the contestability of markets, Section 7 summarises the implications of the debate in with particular reference to neoclassical views of efficient industry structures and of regulatory frameworks, and Section 8 concludes the paper.

2. THE PERFECTLY CONTESTABLE MODEL AND ITS LEGACY

There are a number reasons why contestability theory made such an initial impact in microeconomic theory and policy. First, the conventional wisdom had placed more emphasis on competition among firms already established in any industry, than on the firms outside it. Second, and related to the first reason, the threat of potential competition in shaping the formation of business policy had not been empirically substantiated. Third, BPW's concern for the general application of their model of perfect contestability caused economists to focus on the plausibility of the model's assumptions rather than see the real contribution of contestability theory – namely that barriers to exit (sunk costs), which would preclude hit-and-run entry to markets, could be as much a source of monopoly power as barriers to entry. Finally, the model appeared to provide academic credibility to political forces in the United States favoring removal of the prevailing regulatory regime.

The appeal of contestability theory arose from the conclusion that the allocative and productive efficiencies of perfect competition could be achieved in industries with relatively high levels of market concentration. The theory appeared to reverse the direction of microeconomic theory stemming from Bain's (1950a, 1950b) analysis of the importance of potential entry and its relationship with the nature and height of the barriers to entry, the industry structure and the conduct of firms actively competing. Bain's barriers to entry (absolute cost advantages, product differentiation and the minimum efficient scale of entry) restricted the ability of potential entrants to discipline the conduct of incumbent firms. In the pure form, the contestable market thesis simply assumed away Bain's barriers to entry.

In the pursuit of a general application, BPW conferred upon their model many of the assumptions of perfect competition, such as perfect knowledge, perfect factor mobility, and the homogeneity of products. Yet a single deviation from these stringent assumptions may confer advantages to incumbent firms.

Contestability theory drew attention to sunk costs (which had generally been neglected by economists), stressing the distinction between entry and exit costs. In a perfectly contestable market, an entrant must not have the burden of sunk costs when incumbent firms respond to their market entry. The influence of sunk costs on the nature of competition was, however, recognised much earlier early this century by the "railway economists" such as Meyer (1906) and transport economists in the 1960s such as Kolsen (1968). Nevertheless, the contestability debate served to increase the recognition amongst economists, beyond the transport area, that the presence of sunk costs affects the behaviour of incumbent firms, in a static sense. Yet, the real importance of sunk costs in a dynamic sense has been understated because oligopoly theories (particularly contestability theory in the extreme) have been cast in a mould limited, in the main, to one-round games played by rivals ignorant about how their rivals will react. Nothing could be further from reality, as the history of transport demonstrates repeatedly.

The perfectly contestable model with its implied Bertrand-Nash expectation of entrants (incumbent non-reponse before exit is made) simplifies the game strategy. An entrant may take the static view that incumbents' prices are fixed and that a lower vector of prices may capture the entire market (BPW 1988:350). An alternative way of stating this condition is that the entrant's exit lag is shorter than, or equal to, the incumbents' response lag[2]. This assumption circumvents the full range of dynamic post-entry price, quantity and quality games of traditional oligopoly interaction.

Bain recognised the conflict between the Bertrand-Nash assumption of entrants and the logical response of incumbents to large-scale entry, hence his limit price thesis to prevent this eventuality. From his work, two lines of reasoning arise that are relevant to an assessment of the contribution of contestability theory. First, the potential entrant may not be guided by the current market price (relative to expected

---

2 Where the incumbents' response takes the form of a change in pricing, as per the Bertrand model, or a change in the quantity supplied, as per the Cournot model, *ceteris paribus*.

costs) but rather by what post-entry price and rivalry are expected. Second, potential entrants to the industry regard the price as an indicator both of the character of industry demand and of the probable character of rival policy after entry (Bain 1950a:452). Indeed, the limit pricing thesis was extended to explain why, if incumbents fail to limit price and entry occurs, the predatory response of incumbents may provide a further disincentive to entry.

Where Bain and BPW differed was in their interpretation of the incumbent's response. Baumol's position on incumbents' price responses is not truly a strong form of the Bertrand-Nash assumption. Baumol merely assumed that incumbents' prices were only sticky over a period that "renders all production costs economically reversible" (Baumol and Willig 1986:14). The term, hit-and-run entry, was introduced into the debate by Shepherd (1984:576) to describe the brief but large-scale entry suggested by BPW. In a perfectly contestable market there is no entry lag – no information, recognition or response lags – on the part of the entrant and exit can be instantaneous and costless. The hit-and-run concept of entry reduces the entry decision in the perfectly contestable model to a consideration of non-reversible costs and current prices, rather than the scale of production and post-entry prices. The post-entry game situation is effectively disregarded. So, without the hit-and-run entry concept and its associated assumptions, the set of perfectly contestable industries would be limited to those industries that could truly be described as perfectly competitive.

Reconciliation between the Baumol position and the Bertrand-Nash assumption is dependent on the possibility of hit-and-run entry. BPW (1988:426,410-11) were cognisant of the simplification such an assumption involved. However, policy makers have commonly failed to consider whether hit-and-run entry might be feasible before pronouncing on the merits of the perfectly contestable market.

Rationalisation of the no-response assumption on small-scale entry grounds, for reasons of short-term profits or acquisition of market intelligence (by multiproduct firms), ultimately fails due to the long-term implications of such actions. It may be justifiable for the incumbents to ignore small firms (BPW 1988:11) until they are a threat, but as the efficient scale of entry increases, the plausibility of no response from incumbent firms becomes increasingly questionable because the required adjustments also increase accordingly (Shepherd 1984:573). Information seeking entrants, such as multi-product (multi-market) firms from other markets, may enter a new market on a less than minimum efficient scale in order to improve their knowledge of the market or to pre-empt a competitor (Green 1986 and Cairns and Mahabir 1988). Such entry involves the cross-subsidisation of production in the new market. This is unsustainable in the perfectly contestable market because of the ease of entry into, and exit from, markets which prevents the redistribution of supernormal profits (BPW 1988:202).

Leaving aside the implausibility of the Bertrand-Nash assumption, prices adjustments may be slow, and result in a lagged response to new entry by incumbents, due to menu costs associated pricing changes or contractual arrangements. Where long-term contracts dominate relationships between firms and their clients, such as the coal industry, the market commonly subdivides into

contract and spot – auction sectors. It is then only the latter that is subject to contest in the short term. Baumol and Willig (1986:24) thought entry by contract more relevant in the commercial sector, but in Australia entry by contract is common in a range of markets including road freight transport and integrated logistics and, to a lesser extent, in air freight markets.

This section demonstrates with regard to the perfectly contestable model that (i) there is a considerable degree of commonality between the perfectly competitive market model and the perfectly contestable market model, (ii) when viewed from the present, the model is essentially an extension of Bain's work on barriers to entry, industry structure and market conduct, and (iii) the debate in relation to the model prompted economists to critically reassess their understanding of the (neoclassical) theory of the firm, in particular the significance of potential competition and sunk costs, especially exit costs, as an impediment to potential competition.

3. THE IMPERFECTLY CONTESTABLE MARKET

The debate over contestability theory became an investigation of the plausibility and existence of imperfectly contestable markets that approach, but do not strictly conform to, the conditions of perfect contestability. Two models of imperfect contestability are prominent in the literature and are based on the relaxation of the conditions necessary for hit-and-run entry – the exit lag approach and the sunk cost approach.

The exit-lag approach describes the situation in which the entry deterring price may be higher than the competitive level because the exit-lag exceeds the price-response lag (e.g. Schwartz 1986). The longer the period over which fixed costs become economically reversible for the entrant, the more likely incumbents will be able to adjust prices (and/or quantities). If entrants are exposed to predatory pricing, or other forms of retaliation, for any considerable period their profit stream will be reduced and the initial attractiveness of entry will dissipate. Hence, the entry-limiting price may exceed the competitive level and render the market imperfectly contestable in the margin and non-contestable in the limit.

With the sunk cost approach (e.g. Agilardi 1990), the degree of sunk or non-reversible costs is held to limit the extent of the contestability of a market. Entrants may exit the market at any time and forego a proportion of their fixed costs as non-reversible. The smaller the fraction of costs lost, the easier exit from the market becomes, the more closely the market approaches perfect contestability and the limit price approaches the competitive level.

Both approaches are equally plausible. Exit speed and sunk cost can influence the profit of the entrant. However, *de novo* entry into a market requires *time* for planning, market research, factor acquisition, gaining access to infrastructure and the application of resources to this process. Even an established firm considering expansion requires time to acquire information, recognise and differentiate between varying opportunities and time to marshal the resources to respond appropriately. In some instances it may be a matter of years before firms react to profit opportunities. Further research may be warranted in relation to the speed and flexibility of entry to emerging markets facilitated via internet commerce.

Similarly, it is unlikely that the preparation for entry can be done in secret so as to ensure that incumbent firms do not pre-emptively limit prices or expand capacity to produce (or retain the capacity to do so at short notice) or stockpile to flood the market with product at predatory prices. The difficulties of secret preparation apply equally in factor markets (e.g. the 1998 Waterfront Dispute in Australia where Patricks Stevedoring endeavoured to secretly train non-unionised stevedores in Dubai in order to provide an alternative workforce to the members of the Maritime Union of Australia).

The preparation lag approach might be extended by considering an imperfectly contestable market in which it takes a period of time before new entrants can be effective rivals (a "learning curve" effect). This could be interpreted to mean that it takes time to effectively serve the same market demands as incumbents or operate with a similar cost structure. If information is imperfectly distributed, firms may have variable or lagged access to technology and other production processes. Incumbent firms may also possess absolute or strategic cost advantages, at least in the short run. This does not ignore, of course, the possibility that new entrants could be better informed than incumbents if they are transferring product knowledge or production technology from other markets, but if this were the case there would be little incentive to exit the market unless imitation was easy.

There is no perceived difference in the quality of new entrants' product or outputs in the theory of either perfectly competitive or perfectly contestable markets. However, new entrants may be able to service the same market demands as incumbents only with a learning lag or as the "accumulative preferences of buyers for established brand names and company reputations" adjust to include the new entrant (Bain 1972:83). If information is imperfectly distributed, uncertainty about the quality of the goods and services provided by new entrants may impede their accumulation of market share. This is consistent with Schmalensee's (1982) model of first mover advantage. For example, new entrants into an airline charter industry may initially be regarded as "fly by night" operators. Several crashes of chartered aircraft in Australia in recent years have fuelled this perception (e.g. the Seaview Inquiry, BASI (1998)). The costs of advertising to remove such an information asymmetry may create a "sunk cost barrier to entry" (Kessides 1991:44). In this way, real and perceived non-price factors, such as brand loyalty, are likely to have first order implications in imperfectly contestable markets where information is imperfect. Operators not aligned with incumbent firms will be disadvantaged in these regards.

The existence and strengthening of switching costs may also lengthen the period before new entrants can effectively serve the same market demands as incumbents (e.g. Gilbert 1989:506). The growth of incentive programs, such as airline clubs and frequent flyer programs, in creating switching costs suggests the strategy has net benefits for incumbent firms – at least in the short-term. The trend to global airline alliances – interregional integration – has placed pressure on non-aligned airlines to associate themselves with "a rival global alliance", when their regional competitors have taken such action (e.g. McGuire 1998:58). The process is also driven by the advantages of access to extended route networks, information flows and booking agencies.

If firms are uncertain about future demand conditions, incumbent firms may develop excess capacity in the short run instead of limiting prices in order to prevent entry. The aluminum industry exhibits such practices. Such a strategy is not sustainable unless specific circumstances apply – high start-up production costs and low marginal costs. Appelbaum and Lim (1990) suggest that with conditions of demand uncertainty, the level of *ex ante* quantity pre-commitment may act as a strategic advantage for incumbent firms. Excess capacity diminishes the attractiveness of entry because of the propensity for incumbents to engage in price wars and prolong price wars due to their minimal short-run marginal costs[3]. This echoes remarks made in the context of rate wars and capacity investments in the US railway industry late in the 19th century (see Meyer 1906:252). The simplified contestability model assumes that there is no demand uncertainty or ability to sustain sub-optimal cost structures.

As well as the impact of imperfect information, factor market imperfections may advantage incumbent firms. Differences in real factor prices are likely to be greatest in markets covering large regions or spreading internationally. Oum and Yu (1998) found statistically significant differences in international airline cost competitiveness resulting from differences in factor prices after allowing for network and output variations between regions. These differences in input prices have influenced initiatives to improve airline productivity over time following market liberalisation. For example, the US airlines American, Eastern and United adopted two-tier wage systems in the wake of domestic airline deregulation (Petzinger 1995:129-33, 248-249, 228). Incumbent firms are often able to capitalise on certain and long-term supply relationships with factor suppliers, such as suppliers of capital and strategic raw materials to create cost advantages, perhaps at the expense of a degree of price / quality and cost flexibility.

The exercise of market power in factor markets may also extend to capital markets. Risk profiles of established firms, and new firms, may be judged differently by capital markets, thereby raising the cost of obtaining capital funds for new firms relative to incumbents. This was ably demonstrated by airline deregulation in Australia. When publicly-owned Qantas was privatised, its share float was oversubscribed. When privately-owned Compass Airlines Mark II was floated, its share issue was under-subscribed by the public, even with the Queensland Government as the underwriter (Nyathi et. al. 1993a, 1993b). A related problem is the signalling effects of a failed entrants, such as Compass Airlines Mark I and II in the early years of the deregulated Australian domestic airline market, for future capital raising by potential entrants.

Given the constraints of imperfect information and factor market imperfections, the disciplining effects of potential entry tend to be long run in nature, rather than short run. The entry-lag approach presented above, which accommodates imperfect

---

[3] Although a matter of degree in imperfectly contestable markets, the competitive implications of the commitment to irrevocable investment in noncontestable markets have been established by Dixit (1980) and Salop and Scheffman (1983), among others.

factor markets, suggests that imperfectly contestable markets may be based on the principle of hit-and-stay entry. Entry is expected to be unprofitable until information asymmetries and factor market imperfections are resolved. Entry will occur only if (i) the price of goods and services after this period will be sufficient to compensate the entrant, and (ii) rivalry between the new entrant and incumbents is not likely to totally undermine these prices. Consequently, the policy challenge is how to restrict the extent of entry and exit barriers, rather than to assume they do not exist. The legacy of the contestability debate is a model of imperfect contestability that assists the understanding, rather than the prediction, of market forces.

4. HIT-AND-RUN, A DOMINANT ENTRY STRATEGY?

As representations of imperfectly contestable markets developed in the literature, the notion that hit-and-run entry could effectively discipline firm conduct in concentrated industries was found to be conditional on the particular characteristics of the market. An entrant may be willing and capable of sustaining heavy losses in the initial periods after entry if the entrant (i) judges the industry to be capable of sustaining additional capacity as a growing market, (ii) believes that it possesses long-term competitive advantages over incumbent firms, and (iii) believes that in the long term it will be fully compensated for the costs of entry, establishment and competition with incumbent firms. The history of US and English competitive battles between the railways, and with inland water transport, in the latter half of the 19th century, reveal that these beliefs were held by entrants (see Meyer 1906, Cleveland-Stevens 1915 and Ackworth and Stevenson 1924).

With a long-term entry strategy, the entrant may pursue long-run profit maximisation that may involve foregoing shory-run profit maximisation in favour of, for example, market share. This is especially so if the market is growing rapidly, or is anticipated to do so (such as pay-television in Australia). This is often the case for new high technology products that require increasingly larger scales of production. In Australia, telecommunications carriers Telstra and Optus (then duopoly carriers) invested heavily in cable facilities for a market which failed to live up to early expectations.

In the perfectly contestable market the entry decision is free of concern about retaliation by incumbent firms. Current market prices and costs will be the sole guide to the attractiveness of entry if, and only if, hit-and-run entry is the only entry strategy contemplated or is completely dominant over other strategies. The post-entry (game) conditions will obviously be relevant if hit-and-run entry is not consistent with long-run objectives. The entrant must contemplate some exposure to a rate war until exit can be achieved, at the expense of some windfall profits. Milgrom and Roberts (1982) outline the rationale for incumbent firms to act aggressively, even unto predation, if their conduct establishes a reputation that influences the likelihood of future entry where hit-and-run entry is not feasible. In the Australian and New Zealand domestic aviation markets, the reputation of the incumbent airlines, Qantas, Ansett and Air New Zealand, for matching the prices of low cost entrants (such as Compass Mk1 and II, Kiwi International and K2000) should affect the strategy of potential entrants such as Virgin Airlines.

The hit-and-run entry concept shows that as barriers to entry diminish the efficacy of potential entry to discipline a market improves, regardless of its structure. The efficacy of other entry strategies will depend on post-entry conditions. Conventional entry strategies may be prevented, even if the current market price is in excess of the limit price, by the expectation of heavy and protracted post-entry losses due to the reaction of the incumbent firms. This synthesis is a useful by-product of consideration of imperfectly contestable markets.

In summary, the expectations of incumbent firms' behaviour becomes more important as the period of time increases before new entrants (i) can effectively serve the same market demands as incumbents or (ii) can operate with a similar cost structure as incumbents. The crucial point is that degree of ease for hit-and-run entry underpins the degree of contestability of a market and the direct applicability of contestability theory to industry policy.

5. OTHER LEGACIES

Further developments in contestability theory have arisen. These include the concepts of cost contestability and benchmark contestability.

5.1 Cost Contestability

Violation of the Bertrand-Nash assumption of the passive incumbent firm is common in markets especially when large-scale entry is attempted or in the presence of significant sunk costs. In most situations firms can change prices rapidly in response to entry thus minimising the period in which "cream-skimming" by new entrants can occur. However, it is considerably more difficult and time consuming for an established firm to change its cost structure.

The essence of cost contestability, as suggested by Forsyth (1989), is that potential entry is most likely to discipline established firms' costs rather than their pricing. Potentially, such discipline could lead to technically efficient production, a misallocation of resources to incumbents and a transfer between consumers and producers. The concept of cost contestability was evaluated in the context of Australian domestic aviation (Evenden 1996) and was found to be consistent with the incumbent airlines' strategic behaviour in the face of potential competition.

In general, the strengths of the cost contestability model are that it formally adopts a long run perspective and does not assume that incumbent firms hold either prices (Bertrand-Nash) or quantities (Cournot) fixed. Furthermore, as a model of imperfectly contestable markets, the notion of cost contestability aids understanding of corporate responses to the threat of potential market entry.

5.2 Benchmark Contestability

Benchmark contestability is an extension of traditional competitive tendering arrangements whereby services may be put to tender when an incumbent fails to meet frequently revised industry benchmarks for service quality, frequency and pricing. Within industry benchmarks, the discipline of post-entry conduct is introduced through the threat of entry via competitive tender. The utility of the concept is to "highlight the fact that the competition is potential in that an operator

who cannot adjust performance to conform with any revision of price and quality levels will encourage competitive entry via competitive tendering" (Hensher 1993:8). Its origins lie in the suggestions of auctions for franchise monopolies by Demsetz (1968). BPW (1988:413) assert that this method is consistent with the Bertrand-Nash assumption given that incumbents committed capital (i.e. sunk costs) will be fungible within the industry.

The imposition of benchmark contestability is designed to replicate the discipline of perfect contestability. There are several difficulties with this approach, namely (i) the cost structures of the operators may differ from industry norms, allowing efficient operators to bid above their minimum costs, (ii) it is assumed that a new entrant could operate with the same cost structures and serve the same market demands as established operators replaced by the competitive tendering process which experience suggests is often not so, (iii) operators face a prisoner's dilemma: individually, profits are maximised by minimising costs but as an industry, there is little incentive to improve upon industry benchmarks and greater incentive to cost-pad and slow innovation collectively, and (iv) the re-tendering process is a process of actual competition between the incumbent (with associated advantages including considerable information asymmetries) and other firms. Such a re-tendering process is also likely to draw fewer tenders in receding industries as time passes (McGuiness, Gillingwater and Bryman 1994, White 1995).

6. TESTING FOR CONTESTABILITY

Empirical tests for the presence of contestability in a market have the problem that their results are not exclusive to contestable markets. The approach of testing the nature of the market price-competitive price relationship (namely whether (i) the market price (p) is equal to the competitive price (pc), (ii) p is closer to pc than pm (the monopoly price), or (iii) pc = pm) yields ambiguities. The first condition may represent perfect contestability or the strong contestable market hypothesis (Baumol and Willig 1986:15). The second condition is akin to a weak contestable market hypothesis or imperfect contestability. The third condition represents a market that would be non-contestable. This may indicate relative market efficiency, but the conditions fail to discriminate between the disciplining forces of potential and actual competition. So, it is impossible to say whether correspondence with one of these three conditions resulted from the effect of potential entrants in a contestable market or the non-collusive, highly competitive interaction of oligopolists in a non-contestable market.

A second approach to testing for contestability, correlation studies of market concentration and profitability, was used before contestability theory emerged. If the hit-and-run entry mechanism works, economies of scale will not be a barrier to entry and collusion will not be sustainable. Positive correlation between concentration and profitability would not be expected in perfectly contestable industries and this may be an appropriate test of contestability. Correlation between concentration and profitability may not, however, prove the presence of contestability, because it may equally arise from competition between incumbents. This testing method cannot discriminate between the effects of the two forces: potential and actual competition.

Zero economic profits may arise (i) in a perfectly contestable market, (ii) from inefficient production under imperfect competition, or (iii) through vigorous competition between oligopolists. Similarly, the absence of cross-subsidies by incumbents is equally plausible evidence of (i) a perfectly contestable market or (ii) of traditional oligopolists engaged in active competition within a market.

A review of the literature suggests that the ambiguity of the empirical tests of contestability is a significant, and commonly unrecognised, problem in empirical studies of contestability. If the effects of the two forces, actual and potential competition, are not easily separated then theory and policy should not concentrate solely on one (potential competition) and down-play the other (actual competition). Shepherd (1984:577) made a similar criticism of contestability theory – the external conditions are thought to solely dominate internal market conditions according to contestability theory, when internal forces are possibly at least as important. This separability problem has important and under-appreciated implications for microeconomic policy development.

It is important to note that some analyses of market conduct and contestability in newly deregulated environments have tended to take a static view. The interaction between actual competition and potential entrants in an imperfectly contestable market is a dynamic process. Actual competition and potential competition act as complementary forces. BPW (1988) suggest a range of analytical techniques, related to the nature of costs in an industry, which may be utilised to investigate the sustainability of an industry's structure. Similarly, they prescribe stand-alone costs and incremental costs as the upper and lower bounds of sustainable prices in multi-product contestable markets. This is not a satisfactory solution as a sustainable industry structure and competitive pricing may result from active competition between a small number of firms and these are therefore not discrete indicators of conduct disciplined by the potential for entry.

To date, variables indicative of contestable markets remain unspecified and empirical tests are consequently ambiguous. This is intuitively consistent with the complementarity of actual and potential competition in affecting the conduct of firms in highly concentrated markets.

7. IMPLICATIONS OF CONTESTABILITY

7.1 Industry Structure

Despite the qualifications that arise in the use of contestability theory, it has had a considerable impact on economic thought because it considers industry structure endogenously. First, contestable markets develop sustainable industry configurations with market clearing qualities and possibly no supernormal profits (BPW 1988:314). Second, "the prices must yield to each active firm revenues that are no less than the opportunity cost of producing its outputs" (BPW 1988:314). Economic losses would be consistent with an unsustainable industry structure and market exit. Third, "there must be no opportunities for entry that appear profitable to potential entrants who regard the prices of incumbent firms as fixed" (BPW 1988:5). That is, the incumbents' position must not be dominated by any possible entry strategy. The third condition enforces the first two conditions for contestability.

The above conditions presented attractive implications about market performance regardless of structure. If there are no barriers to entry and exit, the threat of potential entry will curtail monopolistic pricing and output restriction. A cost-minimising industry structure will prevail. No cross-subsidies, for example, will be possible. "The division of the total industry output among its firms must minimise the industry's total production cost" (BPW 1988:7). The sustainable industry configuration may range from a natural monopoly to atomistic competition. A natural monopoly will exist if it is less costly for one firm to produce a given quantity than it would be for two or more firms to produce that output. That is, a natural monopoly will exist where: "over the entire relevant range of outputs, the firms cost function is subadditive" (BPW 1988:17). These results can be contrasted with perfect competition that pre-specifies a particular industry structure. Thus an important contribution of contestability theory has been to suggest that, given particular conditions hold, an efficient industry structure is not necessarily atomistic.

7.2 Contestability and Regulatory Frameworks

BPW do not promote deregulation *carte blanche*, despite the fact that the reduction of barriers to entry is perhaps their strongest regulatory prescription. They assert that contestability theory is the appropriate framework by which to judge when and where government intervention is necessary to achieve efficient outcomes. Perfect competition is regarded as "unsuitable as a standard, particularly in circumstances common to regulatory and antitrust issues where scale economies and related attributes dictate the presence of only a small number of firms, at least some of them relatively large" (Baumol and Willig 1986:11).

Early in the debate, Shepherd (1984:572) suggested that the adoption of BPW's thesis for policy purposes was premature because the thesis had not been adequately tested. Policy implications continue to be drawn from contestability theory, with emphasis on the reduction of barriers to entry and exit, firm conduct and an endogenously determined optimal structure (eg. Briand and Kelvin 1998).

One prescription is that regulation could be used to simulate contestability in non-contestable or imperfectly contestable markets (BPW 1988:479). To make a market more contestable it may be necessary to deregulate entry and re-regulate to ensure that the new conditions of entry do not extend any unnecessary cost or strategic advantages to incumbent firms. To improve entry to some markets, Bailey (1988:xv) has suggested "there may well be a need to regulate access rules, for example, by requiring lease or shared use of sunk cost facilities". Contestability theory has been used as justification for the vertical separation of infrastructure with natural monopoly characteristics from operations thought "contestible" (e.g. above and below rail operations), as well as corporatisation and privatisation of utilities in Britain (in the 1980s), New Zealand and Australia (in the 1990s).

When considering the regulatory and policy implications of contestability theory, three issues are notable. First, only in one case – perfect contestability – will the presence of potential entrants be a perfect substitute for vigorous competition between incumbent firms. In a much broader range of cases – imperfect contestability – the forces of actual and potential competition will be complementary and

dynamic. The efficacy of the threat of entry to discipline conduct will be minimal when actual competition is vigorous. *Therefore, in the vast majority of cases, policy should be oriented towards the facilitation and promotion of both contestability and actual competition between incumbent firms.*

Second, both short and long-run perspectives are needed in policy development. In imperfectly contestable markets, economic profits may be sustained in the short-run. Long-run economic profits, however, are likely to attract entry from competitors with "home market" advantages capable of sustaining establishment costs and heavy price competition. To some degree, this may be offset in the long run by incumbent firms minimising the least flexible element of their operations, costs, in order to maximise profit and to maximise their ability to compete with low-cost entrants.

Third, policy designed to promote contestability *and* actual competition should be sensitive to specific industry contexts. An understanding of the common deviations from competitive and contestable conditions is important, as are industry specific imperfections related to the structure of the industry, the nature of industry operations, the industry's historical development, regulation, cost structures and changes therein.

Given the extent to which it is believed that contestability theory influences the regulatory reform policies of governments, it is imperative that the refinements and contextual relevance of contestability theory be appreciated for effective policy outcomes.

8. CONCLUSION

The legacies arising from the debate over contestability are: (i) the wider realisation by economists that atomistically-determined resource allocation decisions were not unique in terms of market efficiencies; (ii) the wider appreciation of the role of sunk costs in barring market entry, (iii) the refinements of the theory of the firm in terms of the relationship between the degree of barriers to entry and to exit and the consequent impact on allocative and technical efficiency, and (iv) the focus of attention on the possibility of market entry by firms with the intention of hit-and-run entry, as opposed to traditional head-to-head competition.

Given particular conditions, contestability theory suggests that industries do not have to be atomistic to be efficient. Therefore for industry regulation, there is no unique virtue in prescribing atomistic competition in all markets if particular markets evolve or push toward higher levels of concentration. Hence, in the vast majority of cases, regulation should be directed toward assisting and promoting both forces – potential competition from firms not presently in the market and actual competition between firms within the market, a point made strongly by the Part X Review of the Australian *Trade Practices Act 1974* (Brazil et. al. 1993:2). A simple "*one-shoe-fits-all*" approach to industry policy will fail in the light of what has been learnt through the contestability debate.

REFERENCES

Ackworth, W.M. (1924), *Elements of Railway Economics*. Rewrite assisted by W.T. Stevenson, first published 1905, Oxford: Claredon Press.

Agliardi, E. (1990), "On the Robustness of Contestability Theory", *International Journal of Industrial Organisation,* **8**, 485-490.

Appelbaum, E. and Lim, C. (1990), "Monopoly and Ex Post Contestable Markets", *Australian Economic Papers,* **29**: 54, 128-140.

Bailey, E.E. (1988), "Forward", vi-xv, in Baumol, W.J., Panzer, J.C. and Willig, R.D. *Contestable Markets and the Theory of Industrial Structure,* revised edition, New York: Harcourt Brace Jovanovich.

Bain, J.S. (1950a), "A Note on Pricing in Monopoly and Oligopoly", *American Economic Review,* 39, March, 448-464.

Bain, J.S. (1950b), "Workable Competition in Oligopoly: Theoretical Considerations and Some Empirical Evidence", *American Economic Review,* **40**, Proceedings, 35-47.

Bain, J.S. (1972), *Essays on Price Theory and Industrial Organisation.* Boston: Little Brown and Co.

Baumol, W.J. (1982), "Contestable Markets: An Uprising of the Theory of Industrial Structure", *American Economic Review,* **72**:1, 1-15.

Baumol, W.J. and Willig, R.D. (1986), "Contestability: Developments Since the Book", *Oxford Economic Papers,* **38**, 9-36.

Baumol, W.J., Panzer, J.C. and Willig, R.D. (1982), *Contestable Markets and the Theory of Industrial Structure,* New York: Harcourt Brace Jovanovich.

Baumol, W.J., Panzer, J.C. and Willig, R.D. (1988), *Contestable Markets and the Theory of Industrial Structure,* revised edition, New York: Harcourt Brace Jovanovich.

Borenstein, S. (1992), "The Evolution of U.S. Airline Competition", *The Journal of Economic Perspectives*, **6**, Spring, 45-73.

Brazil, P., Kolsen, H.M. and Evans, A.M. (1993), *Liner Shipping: Cargoes and Conferences, Part X Review in Brief,* Canberra: AGPS.

Briand, S. and Kelvin, A. (1998), "Assessment of the Regulatory Reform in the European Airlines", *International Journal of Transport Economics*, **25**:1, 3-17.

Bureau of Air Safety Investigation (BASI) (1998), *Regional Airlines Safety Bulletin*, 3/98.

Cairns, R.D. and Mahabir, D. (1988), "Contestability: A Revisionist View", *Economica*. **55**, 269-276.

Cleveland-Stevens, E. (1915), *English Railways: Their Development and Their Relationship to the State,* London: Routledge.

Demsetz, H. (1968), "Why Regulate Utilities?", *Journal of Law and Economics,* **11**, April, 55-65.

Dixit, A. (1980), "The Role of Investment in Entry-Deterrence", *The Economic Journal*, **90**, March, 95-106.

Evenden, R. (1996), *Developments in Contestability Theory: An Application to Australian Domestic Aviation,* Thesis, Queensland University of Technology, Brisbane.

Findlay, C.C. (1985), *Flying Kangaroo,* Sydney: Allen & Unwin.

Gilbert, R.J. (1989), "Mobility Barriers and the Value of Incumbency", 475-536 in Schmalansee, R. and, Willig, R.D. (eds) *Handbook of Industrial Organization.* **1**, Amsterdam: North-Holland.

Green, C. (1986), Mainstreams in Industrial Organisation: Challenges and Tasks, in Shepherd, W.G. and de Jong, H.W. (eds) *Mainstreams in Industrial Organisation: Book 1,* Dordrecht: Kluwer Academic.

Hensher, D.A. (1993), "Local Urban Bus Services: Natural Monopoly and Benchmark Contestability", Working Paper 93-13, Institute of Transport Studies, University of Sydney.

Keeler, J.P. and Formby, J.P. (1994), "Cost Economies and Consolidation in the U.S. Airline Industry", *International Journal of Transport Economics*, **21**:1, 21-45.

Kessides, I.N. (1991), "Entry and Market Contestability: The Evidence From the United States", in Geroski, P.A. and Schwalbach, J. (eds) *Entry and Market Contestability: An International Comparison.* Cornwall: Basil Blackwell.

Kolsen, H.M. (1968), *"Economics and Control of Road-Rail Competition"*, Sydney: Sydney University Press.

Macquire, M. (1998), "Star Pulls Ansett, Air NZ into its Orbit", *Weekend Australian.* 16-17 May, 58.

McGuiness, I.; Gillingwater, D.; and Bryman, A. (1994), "Organisational Responses to Deregulation of the Bus Industry in Britain", *Transport Reviews,* **14**: 4, 341-361.

Meyer, H.R. (1906), *Government Regulation of Railway Rates,* New York: Macmillan.

Milgrom, P. and Roberts, J. (1982), "Predation, Reputation, and Entry Deterrence", *Journal of Economic Theory*, **27**, 280-312.

Morrison, S. and Winston, C. (1986), *Economic Effects of Airline Deregulation,* Washington D.C.: Brookings Institute.

Nyathi, M., Hooper, P. and Hensher, D. (1993a), "Compass Airlines: 1 December 1990 to 20 December 1991, What went wrong? – Part 1", *Transport Reviews*, **13**:2, 119-149.

Nyathi, M., Hooper, P. and Hensher, D. (1993b), "Compass Airlines: 1 December 1990 to 20 December 1991, What went wrong? – Part 2", *Transport Reviews*, **13**:3, 185-206.

Oum, T.H. and Yu, C. (1998), "Cost Competitiveness of Major Airlines: An International Comparison", *Transport Research, Part A*, **32**:6, 407-422.

Petzinger, T. Jnr. (1995), *Hard Landing,*. London: Aurum Press.

Salop, S.C. and Scheffman, D.T. (1983), "Raising Rivals' Costs", *AEA Papers and Proceedings*, **73**:2, 267-271.

Scherer, F.M. (1989), "On the Current State of Knowledge in Industrial Organisation", in Shepherd, W.G. and de Jong, H.W. (eds) *Mainstreams in Industrial Organisation: Book 1*. Dordrecht: Kluwer Academic.

Schmalensee, R. (1982), "Product Differentiation Advantages of Pioneering Brands", *American Economic Review*, **72**, 349-366.

Schwartz, M. (1986), "The Nature and Scope of Contestability Theory", *Oxford Economic Papers*. **38**, 37-57.

Shepherd, W.G. (1984), ""Contestability" vs. Competition", *American Economic Review*, **74**: 4, 572-585.

Spence, M. (1983), "Contestable Markets and the Theory of Industrial Structure: A Review Article", *Journal of Economic Literature*, **21**, 981-990.

Stigler, G.J. (1968), *Organisation of Industry*, Homewood: Irwin.

White, P. (1995), "Deregulation of the Local Bus Services in Great Britain: An Introductory Review", *Transport Reviews*, **15**: 2, 185-209.